

Form 1449 (Modified)		Atty Docket No.	Application No.:
		FEB 27 2001 FEE PAID TM OFFICE Information Disclosure Statement By Applicant	SRI1P020/US-4184-2 09/620,025
(Use Several Sheets if Necessary)		Applicant: Petrine et al. Filing Date July 20, 2000	Group 2743

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
✓	A1	5,902,836	05/11/99	Bennet et al.			08/23/95
✓	A2	5,229,979	07/20/93	Scheinbeim et al.			12/13/91
✓	A3	5,642,013	06/24/97	Whitehead et al.			05/01/95
✓	A4	5,835,453	11/10/98	Wynne et al.			05/05/97

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
✓	A5	Aramaki, S., S. Kaneko, K. Arai, Y. Takahashi, H. Adachi, and K. Yanagisawa. 1995. "Tube Type Micro Manipulator Using Shape Memory Alloy (SMA)," <i>Proceedings of the IEEE Sixth International Symposium on Micro Machine and Human Science</i> , Nagoya, Japan, pp. 115-120.
	A6	Bharti, V., Y. Ye, T.-B. Xu and Q. M. Zhang, "Correlation Between Large Electrostrictive Strain and Relaxor Behavior with Structural Changes Induced in P(VDF-TrFE) Copolymer by electron Irradiation," <i>Mat. Res. Soc. Symp. Proc. Vol 541</i> , pp: 653-659 (1999).
	A7	Bobbio, S., M Kellam, B. Dudley, S. Goodwin Johansson, S. Jones, J. Jacobsen, F. Tranjan, and T. DuBois, "Integrated Force Arrays," in <i>Proc. IEEE Micro ElectroMechanical Systems Workshop</i> , Fort Lauderdale, Florida February 1993.
	A8	Caldwell, D., G. Medrano-Cerda, and M. Goodwin, "Characteristics and Adaptive Control of Pneumatic Muscle Actuators for a Robotic Elbow," <i>Proc. IEEE Int. Conference on Robotics and Automation</i> , San Diego, California (8-13 May 1994).
	A9	Calvert, P. and Z. Liu, "Electrically stimulated bilayer hydrogels as muscles," <i>Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices</i> , March 1-2, 1999, Newport Beach, California, USA, pp. 236-241.
	A10	Cheng, Z.-Y., H. S. Xu, J. Su, Q. M. Zhang, P.-C. Wang, and A. G. MacDiarmid, "High performance of all-polymer electrostrictive systems," <i>Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices</i> , March 1-2, 1999, Newport Beach, California, USA., pp. 140-148.
	A11	De Rossi, D., and P. Chiarelli. 1994. "Biomimetic Macromolecular Actuators," <i>Macro-Ion Characterization, American Chemical Society Symposium Series</i> ; Vol. 548, Ch. 40, pp. 517-530.
	A12	Egawa, S. and I. Higuchi, "Multi-Layered Electrostatic Film Actuator," <i>Proc. IEEE Micro Electra Mechanical Systems</i> , Napa Valley, California, pp. 166-171 (February 11-14, 1990).
✓	A13	Full, R. J. and K. Meijer, "Artificial Muscles Versus Natural Actuators From Frogs To Flies," <i>Proceedings of the 7th SPIE Symposium on Smart Structures and Materials-Electroactive Polymers and Devices (EAPAD) Conference</i> , March 6-8, 2000, Newport Beach, California, USA, pp. 2-9.

Examiner MARK J. BUD
PRIMARY EXAMINER Date Considered 5-07-04

Examiner initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)

Priority Docket No.

86R1P020/US-4184-2

Application No.:
09/620,025Information Disclosure
Statement By Applicant

Applicant:

Pelrine et al.

Filing Date

July 20, 2000

Group
2743

(Use Several Sheets if Necessary)

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
M	B1	Furuhashi, T., T. Hirano, and H. Fujita, "Array-Driven Ultrasonic Microactuators," Solid State Sensors and Actuators, 1991, Digest of Tech. Papers, Transducers, pp. 1056-1059
	B2	Gilbertson, R.G., and J.D. Busch. 1994. "Survey of Micro-Actuator Technologies for Future Spacecraft Missions," presented at the conference entitled "Practical Robotic Interstellar Flight: Are We Ready?" New York University and The United Nations, New York. (August 29 and September 1, 1994); also published on the World Wide Web at http://nonothinc.com/nanosci/microtech/mems/ten-actuators/gilbertson.html .
	B3	Hirano, M., K. Yanagisawa, H. Kuwano, and S. Nakano, "Microvalve with Ultra-low Leakage," Tenth Annual International Workshop on Micro Electromechanical Systems, Nagoya, Japan, IEEE Proceedings (January 26-30, 1997), pp. 323-326.
	B4	Hirose, S., Biologically Inspired Robots: Snake-like Locomotors and Manipulators, "Development of the ACM as a Manipulator", Oxford University Press, New York, 1993, pp.170-172.
	B5	Hunter, I., S. Lafontaine, J. Hollerbach, and P. Hunter, "Fast Reversible NiTi Fibers for Use in MicroRobotics," Proc. 1991 IEEE Micro Electro Mechanical Systems-MEMS '91, Nara, Japan, pp.166-170.
	B6	Hunter, I.W., and S. Lafontaine, "A Comparison of Muscle with Artificial Actuators", Technical Digest of the IEEE Solid-state Sensor and Actuator Workshop, Hilton Head, South Carolina, June 22-25, 1992, pp.178-185.
	B7	Kawamura, S., K. Minami, and M. Esashi, "Fundamental Research of Distributed Electrostatic Micro Actuator," Technical Digest of the 11th Sensor Symposium, pp. 27-30(1992).
	B8	Liu, C., Y. Bar-Cohen, and S. Leary, "Electro-statically restricted polymers (ESSP)," Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices, March 1-2, 1999, Newport Beach, California, USA., pp. 186-190.
	B9	Lang, J. M. Schlect, and R. Howe, "Electric Micromotors: Electromechanical Characteristics," Proc. IEEE Micro Robots and Teleoperators Workshop, Hyannis, Massachusetts (November 9-11, 1987).
	B10	Liu, Y., J. Zeng, Y.X. Wang, H. Yu, and R. Claus, "Self-Assembled Flexible Electrodes on Electroactive Polymer Actuators," Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices, March 1-2, 1999, Newport Beach, California, USA., pp. 284-288.
	B11	Olsson, A., O. Larsson, J. Holm, L. Luridbladh, O. Ohman, and G. Stemme. 1997. "Valve-less Diffuser Micropumps Fabricated using Thermoplastic Replication," Proc. IEEE Micro Electro Mechanical Systems, Nagoya, Japan, pp. 305-310 (January 26-30, 1997).
Examiner	MARK U. BLINCO	Date Considered 5-27-04

Examiner: ~~Information Disclosed~~. Draw line through citation if not in conformance and not considered prior to copy of this form with next communication to applicant.

Form 1449 (Modified)

O P E
P A T E N T & T R ADE M A R K O F F I C E
FEB 27 2001

Information Disclosure Statement By Applicant

(Use Several Sheets if Necessary)

Atty Docket No.
SR11P020/US-4184-2Application No.:
09/620,025

Applicant:

Pelrine et al.

Filing Date
July 20, 2000Group
2743

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>PK</i>	C1	Olsson, A., G. Stemme, and E. Stemme, "The First Valve-less Diffuser Gas Pump," Tenth Annual International Workshop on Micro Electromechanical Systems, Nagoya, Japan, <i>IEEE Proceedings</i> (January 26-30, 1997), pp.108-113.
	C2	Otero, T.F., J. Rodriguez, and C. Santamaria, "Smart Muscle Under Electrochemical Control of Molecular Movement in Polypyrrole Films," <i>Materials Research Society Symposium Proceedings</i> , Vol. 330, pp.333-338, 1994
	C3	Su, J., Z. Ounaies, J. S. Harrison, Y. Bara-Cohen and S. Leary, "Electromechanically Active Polymer Blends for Actuation," <i>Proceedings of the 7th SPIE Symposium on Smart Structures and Materials-Electroactive Polymers and Devices (EAPAD) Conference</i> , March 6-8, 2000, Newport Beach, California, USA, pp. 65-72.
	C4	Wax, S. G. and R. R. Sands, "Electroactive Polymer Actuators and Devices," <i>Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymers Actuators and Devices</i> , March 1-2, 1999, Newport Beach, California, USA., pp. 2-10.
	C5	Winters, J., "Muscle as an Actuator for Intelligent Robots," <i>Robotics Research: Trans. Robotics International of SME</i> , Scottsdale, AZ (August 18-21, 1986).
	C6	Zhang, Q. M., V. Bharti, Z.-Y. Cheng, T.-B. Xu, S. Wang, T. S. Ramotowski, F. Tito, and R. Ting, "Electromechanical Behavior of Electroactive P(VDF-TrFE) Copolymers," <i>Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices</i> , March 1-2, 1999, Newport Beach, California, USA., pp. 134-139.
	C7	Zhang, Q. M., Z.-Y. Cheng, V. Bharti, T.-B. Xu, H. Xu, T. Mai, and S. J. Gross, "Piezoelectric And Electrostrictive Polymeric Actuator Materials," <i>Proceedings of the 7th SPIE Symposium on Smart Structures and Materials-Electroactive Polymers and Devices (EAPAD) Conference</i> , March 6-8, 2000, Newport Beach, California, USA, pp. 34-50.
<i>V</i>	C8	Kornbluh, R., G. Andeen, and J. Eckerle, "Artificial Muscle: The Next Generation of Robotic Actuators," presented at the Fourth World Conference on Robotics Research, SME Paper MS91-331, Pittsburgh, PA, September 17-19, 1990, BUDD
Examiner	PRIMARY EXAMINER	Date Considered <i>5-27-04</i>

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)

FD-2
2001
Information Disclosure
Statement By ApplicantArt Docket No.
SRI1P020/US-4184-2Application No.:
09/620,025

(Use Several Sheets if Necessary)

Applicant:
Pelrine et al.
Filing Date
July 20, 2000Group
2743

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>MB</i>	D1	Kornbluh, R., R. Pelrine, J. Joseph, "Elastomeric Dielectric Artificial Muscle Actuators for Small Robots," <i>Proceedings of the Third IASTED International Conference on Robotics and Manufacturing</i> , June 14-16, 1995, Cancun, Mexico.
	D2	Kornbluh, R., R. Pelrine, Jose Joseph, Richard Heydt, Qibing Pei, Seiki Chiba, 1999. "High-Field Electrostriction Of Elastomeric Polymer Dielectrics For Actuation", Proceedings of the SPIE International Symposium on Smart Structures and Materials: Electro-Active Polymer Actuators and Devices, March 1-2, 1999, Newport Beach, California, USA. pp. 149-161.
	D3	Kornbluh, R., R. Pelrine, Q. Pei, S. Oh, and J. Joseph, 2000. "Ultrahigh Strain Response of Field-Actuated Elastomeric Polymers," Proceedings of the 7th SPIE Symposium on Smart Structures and Materials-Electroactive Polymers and Devices (EAPAD) Conference, March 6-8, 2000, Newport Beach, California, USA, pp. 51-64.
	D4	Kornbluh, R., R. Pelrine, R. Heydt, and Q. Pei, "Acoustic Actuators Based on the Field-Activated Deformation of Dielectric Elastomers.", (2000)
	D5	Pelrine, R., R. Kornbluh, J. Joseph, and S. Chiba, "Electrostriction of Polymer Films for Microactuators," <i>Proc. IEEE Tenth Annual International Workshop on Micro Electro Mechanical Systems</i> , Nagoya, Japan, January 26-30, 1997, pp. 238-243.
	D6	Pelrine, R., J. Eckerle, and S. Chiba, "Review of Artificial Muscle Approaches," invited paper, in <i>Proc. Third International Symposium on Micro Machine and Human Science</i> , Nagoya, Japan, October 14-16, 1992
<i>V</i>	D7	Pelrine, R., Roy Kornbluh, Jose Joseph, Qibing Pei, Seiki Chiba "Recent Progress in Artificial Muscle Micro Actuators," , SRI International, Tokyo, 1999 MITI/NEEDOIMNIC, 1999
Examiner	MARK O. BUTIN PRIMARY EXAMINER ART UNIT 200	Date Considered 5-27-04

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Atty Docket No.
SRI1P020/US-4184-2Application No.:
09/620,025Information Disclosure
Statement By Applicant

Applicant:

Peltine et al.

Filing Date

July 20, 2000

Group
2743

(Use Several Sheets if Necessary)

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>W</i>	E1	Peltine, R., R. Kornbluh, and J. Eckerle, "Elastomeric Dielectric Polymer Film Sonic Actuator," US Provisional Patent Application No. 60/037,400, filed Feb. 7, 1997.
	E2	Peltine, R., R. Kornbluh, J. Joseph, and S. Chiba, "Artificial Muscle Micro Actuators," US-4067-2P, U.S. Provisional Patent Application No. 60/161,325, filed 25 October 1999.
	E3	Peltine, R., R. Kornbluh, J. Joseph, Q. Pei, and S. Chiba, "Electrostrictive Polymers as Micro Actuators," US-4042-2P, U.S. Provisional Patent Application No. 60/153,329, filed 10 September 1999.
	E4	Peltine, R., R. Kornbluh, Q. Pei, and J. Joseph, "High-Speed Electrically Actuated Polymers and Methods of Use," US-4028-2P, U.S. Provisional Patent Application No. 60/144,556, filed 20 July 1999.
	E5	Anderson, R. 1986. "Mechanical stress in a dielectric solid from a uniform electric field," <i>Physical Review B</i> , 33(2), pp.1302-1307.
	E6	Baughman, R. H., L. W. Shacklette, and R. L. Elsenbaumer, E. J. Plichta, and C. Becht, "Micro electromechanical actuators based on conducting polymers," in <i>Molecular Electronics, Materials and Methods</i> , P. I. Lazarev (ed.), Kluwer Academic Publishers, pp. 267-289 (1991).
	E7	Baughman, R., L. Shacklette, R. Elsenbaumer, E. Plichta, and C. Becht "Conducting Polymer Electromechanical Actuators," <i>Conjugated Polymeric Materials: Opportunities in Electronics, Optoelectronics and Molecular Electronics</i> , eds. J.L. Bredas and R.R. Chance, Kluwer Academic Publishers, The Netherlands, pp. 559-582, 1990
	E8	Bharti, V., H. S. Xu, G. Shanthi, and Q. M. Zhang, "Polarization and Structural Properties of High Energy Electron Irradiated Poly(vinylidene fluoride-trifluoroethylene) Copolymer Films," to be published in <i>J. Appl. Phys.</i> (2000).
	E9	Bharti, V., X.-Z. Zhao, Q. M. Zhang, T. Romotowski, F. Tito, and R. Ting, "Ultrahigh Field Induced Strain And Polarization Response In Electron Irradiated Poly(Vinylidene Fluoride-Trifluoroethylene) Copolymer," <i>Mat. Res. Innovat.</i> Vol. 2, 57-63 (1998).
	E10	Bharti, V., Z.-Y. Cheng, S. Gross, T.-B. Xu, and Q. M. Zhang, "High electrostrictive strain under high mechanical stress in electron-irradiated poly(vinylidene fluoride-trifluoroethylene) copolymer," <i>Appl. Phys. Lett.</i> Vol. 75, 2653-2655 (October 25, 1999).
Examiner	PRIMARY EXAMINER <i>APT/AM/2001</i>	Date Considered <i>5-17-04</i>

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)

Priority Docket No.

SRI IP020/US-4184-2

Application No.:
09/620,025Information Disclosure
Statement By Applicant

Applicant:

Pelrine et al.

Filing Date

July 20, 2000

Group
2743

(Use Several Sheets if Necessary)

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	F1	Bohon, K., and S. Krause, "An Electrorheological Fluid and Siloxane Gel Based Electromechanical Actuator: Working Toward an Artificial Muscle," to be published in <i>J. Polymer Sci. Part B: Polymer Phys.</i> (2000)
	F2	Cheng, Z.-Y., T.-B. Xu, V. Bharti, S. Wang, and Q. M. Zhang, "Transverse Strain Responses In The Electrostrictive Poly(Vinylidene Fluoride-Trifluoroethylene) Copolymer," <i>Appl. Phys. Lett.</i> Vol 74, No. 13, pp. 1901-1903, March 29, 1999.
	F3	Chiarelli, P., A. Della Santa, D. DeRossi, and A. Mazzoldi. 1995. "Actuation Properties of Electrochemically Driven Polypyrrole Free-standing Films," <i>Journal of Intelligent Material Systems and Structures</i> , Vol. 6, pp. 32-37, January 1995
	F4	Elhami, K., and B. Gauthier-Manuel, "Electrostriction Of The Copolymer Of Vinylidene-Fluoride And Trifluoroethylene," <i>J. Appl. Phys.</i> Vol. 77 (8), 3987-3990, April 15, 1995.
	F5	Flynn, Anita M., L.S. Tayrow, S.F. Bart, R.A. Brooks, D.J. Ehrlich, K.R. Udayakumar, and L.E. Cross. 1992. "Piezoelectric Micromotors for Microrobots," <i>IEEE Journal of Microelectromechanical Systems</i> , Vol.1, No.1, pp. 44-51 (March 1992); also published as <i>MIT AI Laboratory Memo 1269</i> , Massachusetts Institute of Technology (February 1991).
	F6	Furukawa, T., and N. Seo., "Electrostriction as the Origin of Piezoelectricity in Ferroelectric Polymers," <i>Japanese J. Applied Physics</i> , Vol. 29, No. 4, pp. 675-680 (April 1990).
	F7	Kaneto, K., M. Kaneko, Y. Min, and A.G. MacDiarmid. 1995. "Artificial Muscle: Electromechanical Actuators Using Polyaniline Films," <i>Synthetic Metals</i> 71, pp. 2211-2212, 1995
	F8	Kondoh Y., and T. Ono. 1991. "Bimorph Type Actuators using Lead Zinc Niobate-based Ceramics," <i>Japanese Journal of Applied Physics</i> , Vol. 30, No. 9B, pp. 2260-2263, September 1991.
	F9	Lawless, W. and R. Arenz, "Miniature Solid-state Gas Compressor," <i>Rev. Sci Instrum.</i> , 58(8), pp. 1487-1493, August 1987
	F10	Martin, J. and R. Anderson, 1999. "Electrostriction In Field-Structured Composites: Basis For A Fast Artificial Muscle?", <i>Journal of Chemical Physics</i> , Vol. 111, no. 9, pp.4273-4280, September 1, 1999
	F11	Ohara, K., M. Hennecke, and J. Fuhrmann, "Electrostriction of polymethylmethacrylates," <i>Colloid & Polymer Sci.</i> Vol 280, 164-168 (1982).
Examiner	PRIMARY EXAMINER	Date Considered 5-27-04

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

O I P E

Form 1449 (Modified) <i>2/27/2001</i>	Atty Docket No. SRI1P020/US-4184-2	Application No.: 09/620,025
Information Disclosure Statement By Applicant <i>MARK BUDD</i> (Use Several Sheets if Necessary)	Applicant: Pelrine et al.	Group 2743
	Filing Date July 20, 2000	

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>WB</i>	G1	Otero, T.F., J. Rodriguez, E. Angulo and C. Santamaría, "Artificial Muscles from Bilayer Structures," <i>Synthetic Metals</i> , Vol. 55-57, pp. 3713-3717 (1993).
	G2	Park, S.E., and T. Shrout, "Ultrahigh Strain and Piezoelectric Behavior in Relaxor Based Ferroelectric Single Crystals," <i>J Applied Physics</i> , Vol. 82, pp. 1804-1811, August 15, 1997
	G3	Pei, Q., O. Inganäs, and I. Lundström, "Bending Bilayer Strips Built From Polyaniline For Artificial Electrochemical Muscles," <i>Smart Materials and Structures</i> , Vol.2, pp. 16, January 22, 1993
	G4	Scheinbeim, J., B. Newman, Z. Ma, and J. Lee, "Electrostrictive Response of Elastomeric Polymers," <i>ACS Polymer Preprints</i> , 33(2), pp.385-386, 1992
	G5	Schlaberg, H. L., and J. S. Duffy, "Piezoelectric Polymer Composite Arrays For Ultrasonic Medical Imaging Applications," <i>Sensors and Actuators, A</i> 44, pp. 111-117, February 22, 1994
	G6	Shahinpoor, M., "Micro-electro-mechanics of Ionic Polymer Gels as Electrically Controllable Artificial Muscles," <i>J. Intelligent Material Systems and Structures</i> , Vol. 6, pp. 307-314, May 1995
	G7	Shkel, Y., and D. Klingenberg, "Material Parameters for Electrostriction," <i>J Applied Physics</i> , Vol. 80(8), pp. 4566-4572, October 15, 1996
	G8	Smela, E., O. Inganäs, and I. Lundström, "Controlled Folding of Micrometer-size Structures," <i>Science</i> , Vol. 268, pp. 1735-1738 (23 June 1995).
	G9	Smela, E., O. Inganäs, Q. Pei, and I. Lundström, "Electrochemical Muscles: Micromachining Fingers and Corkscrews," <i>Advanced Materials</i> , Vol.5, No. 9, pp.630-632, September 1993
	G10	Su, J., Q. M. Zhang, C. H. Kim, R. Y. Ting, and R. Capps, "Effects of Transitional Phenomena on the Electric Field induced Strain-electrostrictive Response of a Segmented Polyurethane Elastomer," pp. 1363-1370, January 20, 1997.
	G11	Tobushi, H., S. Hayashi, and S. Kojima, "Mechanical Properties of Shape Memory Polymer of Polyurethane Series," in <i>JSME International Journal, Series I</i> , Vol.35, No.3, 1992
<i>✓</i>	G12	Uchino, K. 1986. "Electrostrictive Actuators: Materials and Applications," <i>Ceramic Bulletin</i> , 65(4), pp. 647-652, 1986
Examiner <i>MARK BUDD</i> <i>PRIMARY EXAMINER</i>	Date Considered	<i>S-27-04</i>

Examiner: Initials *WB* considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)

FEB 27 2001

Information Disclosure
Statement By Applicant

(Use Several Sheets if Necessary)

City Docket No.
SR11P020/US-4184-2Application No.:
09/620,025

Applicant:

Pelrine et al.

Filing Date

July 20, 2000

Group
2743

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
W	H1	Wade, W. L., Jr., R. J. Mammone and M. Binder, "Increased Dielectric Breakdown Strengths Of Melt-Extruded Polyporopylene Films," <i>Polymer</i> , Vol. 34, No. 5, pp. 1093-4 (1993).
	H2	Zhang, Q., V. Bharti, and X. Zhao, "Giant Electrostriction and Relaxor Ferroelectric Behavior in Electron-irradiated Poly(vinylidene fluoride-trifluoroethylene) Copolymer," <i>Science</i> , Vol. 280, pp. 2101-2104 (26 June 1998).
	H3	Zhenyi, M., J.I. Scheinbeim, J.W. Lee, and B.A. Newman. 1994. "High Field Electrostrictive Response of Polymers," <i>Journal of Polymer Sciences, Part B-Polymer Physics</i> , Vol.32, pp. 2721-2731, 1994
	H4	Heydt, R., R. Kornbluh, R. Pelrine, and B. Mason, "Design and Performance of an Electrostrictive Polymer Film Acoustic Actuator", <i>Journal of Sound and Vibration</i> (1998)215(2), 297-311.
	H5	Heydt, R., R. Pelrine, J. Joseph, J. Eckerle, and R. Kornbluh. "Acoustical Performance of an Electrostrictive Polymer Film Loudspeaker", <i>Journal of the Acoustical Society of America</i> Vol. 107, pp. 833-839 (Feb. 2000).
	H6	Pelrine, R., R. Kornbluh, and J. Joseph, "Electrostriction of Polymer Dielectrics with Compliant Electrodes as a Means of Actuation," <i>Sensors and Actuators A: Physical</i> , Vol. 64, 1998, pp.77-85.
	H7	Pelrine, R., R. Kornbluh, and G. Kofod, "High Strain Actuator Materials Based on Dielectric Elastomers," submitted to <i>Advanced Materials</i> (May 2000).
	H8	Pelrine, R., R. Kornbluh, Q. Pei, and J. Joseph, "High Speed Electrically Actuated Elastomers with Over 100% Strain," <i>Science</i> , Vol. 287, No. 5454, pages 1-21, 2000
	H9	Brock, D. L., "Review of Artificial Muscle based on Contractile Polymers," MIT Artificial Intelligence Laboratory, A.I. Memo No. 1330, Nov. 1991.
	H10	Kornbluh, R. D and R. E. Pelrine., "Dexterous Multiarticulated Manipulator with Electrostrictive Polymer Artificial Muscle," ITAD-7247-QR-96-175, SRI Project Number 7247, Prepared for: Office of Naval Research, November 1996
	H11	R. Pelrine and Kornbluh, R., and. 1995. "Dexterous Multiarticulated Manipulator with Electrostrictive Polymer Artificial Muscle Actuator," EMU 95-023, SRI International, Menlo Park, California, April 28, 1995.
	H12	M. Greene and J. A. Willett, and Kornbluh, R., "Robotic systems," in ONR Report 32198-2, Ocean Engineering and Marine Systems 1997 Program (Dec. 1997)
	H13	Nguyen, T., J. A. Willett and Kornbluh, R., "Robotic systems," in ONR Ocean, Atmosphere, and Space Fiscal Year 1998 Annual Reports (Dec. 1998)
Examiner	MARK Q. BUDDE	Date Considered 5-27-04

Examiner's Initials _____ Date Considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)

FEB 27 2001
U.S. PATENT & TRADEMARK OFFICE

Information Disclosure Statement By Applicant

(Use Several Sheets if Necessary)

Atty Docket No.
SRI1P020/US-4184-2
Applicant:
Pelrine et al.
Filing Date
July 20, 2000Application No.:
09/620,025
Group
2743

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
MM	11	Nguyen, T., Green, M., and Kornbluh, R., "Robotic Systems," in ONR Ocean, Atmosphere, and Space Fiscal Year 1999 Annual Reports (Dec. 1999)
	12	Pelrine, R., and J. Joseph, <i>FY 1992 Final Report on Artificial Muscle for Small Robots</i> , ITAD-3393-FR-93-063, SRI International, Menlo Park, California, March 1993
	13	Pelrine, R., and J. Joseph, <i>FY 1993 Final Report on Artificial Muscle for Small Robots</i> , ITAD-4570-FR-94-076, SRI International, Menlo Park, California.
	14	Pelrine, R., R. Kornbluh, and J. Joseph, <i>FY 1994 Final Report on Artificial Muscle for Small Robots</i> , ITAD-5782-FR-95-050, SRI International, Menlo Park, California, 1995
	15	Pelrine, R., R. Kornbluh, and J. Joseph, <i>FY 1995 Final Report on Artificial Muscle for Small Robots</i> , ITAD-7071-FR-96-047, SRI International, Menlo Park, California, 1996
	16	Pelrine, R., R. Kornbluh, and J. Joseph, <i>FY 1996 Final Report on Artificial Muscle for Small Robots</i> , ITAD-7228-FR-97-058, SRI International, Menlo Park, California, 1997
	17	Pelrine, R., R. Kornbluh, and J. Joseph, <i>FY 1997 Final Report on Artificial Muscle for Small Robots</i> , ITAD-1612-FR-98-041, SRI International, Menlo Park, California, 1998
	18	Pelrine, R., R. Kornbluh, and J. Joseph, <i>FY 1998 Final Report on Artificial Muscle for Small Robots</i> , ITAD-3482-FR-99-36, SRI International, Menlo Park, California, 1999
	19	Pelrine, R., R. Kornbluh, and J. Joseph, <i>FY 1999 Final Report on Artificial Muscle for Small Robots</i> , ITAD-10162-FR-00-27, SRI International, Menlo Park, California, 2000
	110	T. B. Nguyen, C. K. DeBolt, Shastri, S. V., and A. Mann, "Advanced Robotic Search," in ONR Ocean, Atmosphere, and Space Fiscal Year 1999 Annual Reports (Dec. 1999)
	111	Dowling, K., <i>Beyond Faraday-Non Traditional Actuation</i> , available on the World Wide Web at http://www.frc.rj.cmu.edu/~nivek/OTH/beyond-faraday/beyondfaraday.html , 9 pages, 1994
	112	Treloar, L.R.G., "Mechanics of Rubber Elasticity," <i>J Polymer Science, Polymer Symposium</i> , No. 48, pp. 107-123, 1974
	113	Yam, P., "Plastics Get Wired", <i>Scientific American</i> , Vol. 273, pp. 82-87, July 1995

Examiner

JAMES D. BUDD
PRIMARY EXAMINER

Date Considered

5-27-04

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)

FEB 27 2001

Information Disclosure Statement By Applicant

(Use Several Sheets if Necessary)

Atty Docket No.
SRI1P020/US-4184-2
Applicant:
Peltine et al.
Filing Date
July 20, 2000Application N.:
09/620,025Group
2743

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
JF	J1	Kornbluh, R., Peltine, R., Joseph, J., Pei, Q. and Chiba, S., "Ultra-High Strain Response of Elastomeric Polymer Dielectrics", Proc. Materials Res. Soc., Fall meeting, Boston, MA, pages 1-12, December 1999
	J2	Kornbluh, R., Peltine, R., Eckerle, J., Joseph, J., "Electrostrictive Polymer Artificial Muscle Actuators", IEEE International Conference on Robotics and Automation, Leuven, Belgium, 1998
	J3	Ajluni, Cheryl, "Pressure Sensors Strive to Stay on Top, New Silicon Micromachining Techniques and Designs Promise Higher Performance", <i>Electronic Design - Advanced Technology Series</i> , October 3, 1994, pp. 67-74
	J4	Anderson, R. A., "Mechanical Stress in a Dielectric Solid From a Uniform Electric Field", <i>The American Physical Society</i> , 1986, pp. 1302-1307
	J5	Ashley, S., "Smart Skis and Other Adaptive Structures", <i>Mechanical Engineering</i> , November 1995, pp. 77-81
	J6	Goldberg, Lee, "Adaptive-Filtering Developments Extend Noise-Cancellation Applications", <i>Electronic Design</i> , February 6, 1995, pages 34 and 36
	J7	Jacobsen, S., Price, R., Wood, J., Ryttig, T., and Rafaelot, M., "A Design Overview of an Eccentric-Motion Electrostatic Microactuator (the Wobble Motor)", <i>Sensors and Actuators</i> , 20 (1989) pages 1-16
	J8	Peltine, R. and Kornbluh, "Electroactive Polymer Devices", U.S. Patent Application No. 09/619,846, filed July 20, 2000, 67 pages
	J9	Peltine et al., "Electroactive Polymer Generators", U.S. Patent Application No. 09/619,848, filed July 20, 2000, 69 pages
	J10	Peltine et al., "Electroactive Polymer Electrodes", U.S. Patent Application No. 09/619,843, filed July 20, 2000, 54 pages
	J11	Peltine et al., "Electroactive Polymer Fabrication", U.S. Patent Application No. 09/619,845, filed July 20, 2000, 55 pages
✓	J12	Pei et al., "Electroactive Polymers", U.S. Patent Application No. 09/619,847, filed July 20, 2000, 70 pages

Examiner

MARK O BUDD

Date Considered

5-27-04

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Incite copy of this form with next communication to applicant.